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ABSTRACT

This document presents a review of recent research efforts on the congnitive domain as it relates to teaching and learning in the classroom, and provides a syntheses of research obtained over the past 25 years. Focus is given to correlational and experimental studies indicating a significant positive relationship between certain teacher behaviors and increased student achievement or improved conduct. Six sections addressing various aspects of teacher effectiveness are included: (1) planning; (2) management of student conduct; (3) instructional organization and development; (4) presentation of subject matter; (5) verbal and nonverbal communication; and (6) testing. A total of 68 references are listed. Appended are a research review entitled "Domains: Knowledge Base of the Florida Performance Measurement System" and a teaching guide called "CASES (Coping Analysis Schedule for Educational Settings)" consisting of seven tables outlining appropriate approaches to seven styles of pupil behavior. (CB)

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TEACHING AND LEARNING IN THE COGNITIVE DOMAIN:

A REVIEW OF THE LITERATURE

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TEACHING AND LEARNING IN THE COGNITIVE DOMAIN: A REVIEW OF THE LITERATURE

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FOREWARD

This document not only contains a review of recent research efforts in the area of teacher effectiveness, but also represents the logical extension of teacher-effectiveness results obtained over the past 25 years as reported in Domains: Knowledge Base of the Florida Performance Measurement System.

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Half of what we know is true.
Half of what we know is false.
The purpose of research is to find out
Which parts of our thinking are true
and which are false.

(Medley, Soar, and Coker, 1984, p. 8)[40]

INTRODUCTION

The purpose of this review of research on teacher effectiveness is to provide Washington teacher training institutions with a representative sampling of the most current research on teaching and learning in the cognitive domain. In completing this work we have updated the knowledge base of the Florida Performance Measurement System (FPMS) Domains. Effective teaching principles which have been developed from the research reviewed for the FPMS can be found in the Appendix section of this document.* Only the results of correlational and experimental studies indicating a significant positive relationship between certain teacher behaviors and increased student achievement, or improved conduct, are presented in this review of the research on teacher effectiveness.

"Teacher behavior", in this paper, refers to anything the teacher does in the classroom, e.g., makes an assignment, lectures, conducts a discussion, praises a student for his or her answer to a question, places the students in a particular seating arrangement, disciplines a student, presents a lesson, etc. "Student achievement" refers to increased gain

*Interested educators can order copies of FPMS materials by contacting the Panhandle Area Educational Cooperative, 411 West Boulevard, Chipley, Florida 32428.

scores on standardized achievement tests. "Improved conduct" typically refers to the extent to which student actions become more consistent with the behavioral expectations established by the teacher, classroom rules, or school-wide rules.

The research reviewed for this paper included studies or reviews conducted since 1980, and only in those cognitive areas identified in the FPMS: Planning; Management of Student Conduct; Instructional Organization and Development; Presentation of Subject Matter; Communication: Verbal and Non-Verbal; and Testing (or Evaluation). Relevant research findings are listed under each of these headings, and the studies from which they are taken are either directly identified in the text, or footnoted, and can be found in the "References" section at the end of the paper.

No attempt has been made to include research findings in the affective domain that may influence teacher effectiveness, or on cognitive findings dealing with student learning styles, teacher personality traits, teaching styles, classroom climate or environment, or other researched areas that may have an impact upon teacher performance. The focus of the FPMS is on specific, observable teacher behaviors in the cognitive domain, that studies have shown to be significantly related to student learning and/or conduct.

Not every correlational or experimental study, or syntheses of studies, conducted since 1980 has been included in this review of the literature on teacher effectiveness. However, it is felt that the findings of the studies that are presented in this document are inclusive enough to reflect a substantial portion of the teacher effectiveness research which has been conducted since 1980.

Researcher Comments Regarding the Generalizability of Current Findings Obtained From Teacher-Effectiveness Studies

In order to give readers a feeling for the "state of the art" in teacher effectiveness research, quotations from several of the researchers referred to in this paper are presented for the reader's consideration:

"No existing theoretical model of teacher effectiveness has a strong empirical base." (Medley, et al 1984, p. 65)[40]

"Only a small part of the domain of effective teacher behavior has been subjected to rigorous research so far, and relatively few significant relationships have been found even in this small domain." (Medley, p. 71)[40]

"Whether the results of research on teaching are ready for the kind of application you wish to make is a questionable matter. The field is still relatively young (about twenty years), and the problems are complex. Many people react to the unavailability of the kind of information you are seeking with the impression that the research is not worth doing. My own reaction is that much more research is needed." (letter from N. L. Gage, February, 1986)

"If your instrument was limited to those behaviors which research has shown to be significantly related to pupil learning, you would cover only a small part of the range of behaviors that distinguish effective teachers from ineffective ones." (Medley, p. 71)[40]

"If research is to be used as guidelines for interpreting behavior, it doesn't much matter if we find generic or cross-setting validity. If we are going to use our research to hold people accountable to the letter of the findings, or to judge their performance, or to rate them as expert or inexpert, then it is very important that the findings themselves have validity and the procedures used to rate the teachers have reliability." (letter from D. Berliner, January, 1986)

"...There do not appear to be any universal teaching competencies...that are appropriate to all teaching circumstances." (Brophy, 1979)[6]

"Teaching effectiveness researchers have always been uneasy about having findings from their studies used as criteria for evaluating the effectiveness of individual teachers..." (Doyle, 1983-84, p. 264)[15]

"...Relatively small variations in the classroom performance of individual teachers can be attributed solely to variations in teacher competence. Teachers make a difference but not all differences are teacher effects. Situational and interactional factors play a role in shaping what happens in a classroom." (Doyle, 1983-84, p. 266)[15]

"When examining differences across teachers within the same study, Emmer and colleagues (1980) found that elementary school teachers used a variety of techniques for achieving the general principles of effective management." (Wildman and Borko, 1983, p. 126)[61]

"To reiterate a point made several times in this document, the literature suggests that there is no one right way to teach." (Wildman and Borko, 1983, p. 126)[61]

"Such patterns suggest the inappropriateness of a single set of behavioral indicators for teachers at different grade levels." (Wildman and Borko, 1983, p. 65)[61]

"There is no single set of variables or a given observational instrument that will be useful or important in all classroom settings." (Good, 1983, p. 119)[27]

"Classroom observational research in the 1970s demonstrated that classrooms are varied and quite complex. Such findings serve to negate the popular misconception that there are universal forms of instruction that tend to work for all students across all subjects and in virtually any school context." (Good, 1983, p. 111)[27]

However, in contrast to these comments, Brophy and Good (1985) state in the Handbook of Research on Teaching:

"We now know much more about teacher effects on achievement than we did in 1963 or even 1973. The myth that teachers do not make a difference in student learning has been refuted, and programmatic research has begun to appear. As a result, the fund of available information on producing student achievement...has progressed from a collection of disappointing and inconsistent findings to a small but well-established knowledge base..."[7]

At the end of their comprehensive chapter entitled "Teacher Behavior and Student Achievement", in the Handbook of Research on Teaching, Brophy and Good (1985) also recommend that:

"Rather than trying to translate it (research) into overly rigid or generalized prescriptions, teacher educators should present this (research) information to teachers within a decision-making format that enables them to examine concepts critically and adapt them to the particular contexts within which they teach." [7] (Underlining has been added for emphasis.)

It is with this thought in mind that the review of recent research on teacher effectiveness is presented in this paper.

Some Caveats Pertaining to Correlational and Experimentally-Designed Research Studies

There are a number of things that ought to be considered when reviewing literature on any area of research. Research studies vary in a number of significant ways, even though they are all directed toward the same goal--in this case, attempting to discern what it is that the teacher does that results in increasing the amount of learning that occurs in the classroom.

The studies must be carefully designed and conducted, without violation of any commonly accepted criteria for experimental design, data collection and processing, and in matters of methodology and analysis. No attempt has been made to assess the quality of the studies reviewed for this paper in terms of the criteria just mentioned, or in terms of the validity or reliability of the results obtained. Because of the professional qualification of the researchers who conducted the studies, it has been assumed that the requirements for experimental design have been adhered to in each study.

The interpretations placed on teacher-effectiveness research findings are very important. First, they should not be used as an immediate basis for restructuring the classroom. Research findings, however, can serve as a source of information for teachers or administrators, to use in identifying and interpreting classroom events. For example, in one of Medley's studies the results indicated clearly that the patterns of teacher behavior that are effective with high achieving math students are quite different from behaviors that are effective with low achieving math students. The findings from the same study also indicated that the patterns of teacher behavior that are effective with high-ability students

in Reading were ineffective with low-ability students in Reading. If these results were validated through replicated studies, they would have serious consequences for teachers of heterogeneously grouped students in Math and Reading.

School districts are also using teacher-effectiveness research to develop observation procedures or instruments in an attempt either to improve the performance of a teacher (formative evaluation), or to determine if a teacher will be certified, hired, fired, reassigned, selected for merit pay, or promoted (summative evaluation). For these summative evaluation purposes it is essential that the validity and reliability of the observation/evaluation instruments be clearly established and that the observations be conducted by a trained, and impartial observer/evaluator.

Some Important Considerations to Make When Reviewing Research:

1. Most public school classrooms are composed of students who have not been randomly assigned to the class. Elementary school principals almost always assign students to classes on the basis of several factors: the sex of the student; his/her level of ability or achievement; the student's behavior records; student and/or parent p ference for a particular teacher; and other factors. High school classes could vary by ability because of the nature of the subject taught, i.e., brighter students would enroll in the more demanding classes. This means that correlational research studies involving public school classrooms will produce results which are based upon class averages representing non-randomized (or intact) groups of

students. The results obtained, then, from correlational studies, are not necessarily generalizeable beyond the groups that were studied. Further, when students are not randomly assigned to classrooms, the residual gain scores obtained on standardized achievement tests are likely to be affected by the regression effect. Regression toward the mean is an inherent characteristic of high and low scorers on pre- and post-standardized achievement tests, if aptitude or previous achievement were considered in placing a student (or students) in a particular classroom.

2. Results obtained from correlational studies do not necessarily indicate "cause and effect" relationships between variables (teaching behavior and student achievement). As Madeline Hunter has indicated, there are no "for sures" in education, only evidence suggesting that there is an <u>increased probability</u> of something occurring if a particular strategy or technique is implemented by a teacher.[65] According to Hunter, what we can conclude from the results of correlational research studies is that the statistical correlations obtained only suggest that there is an <u>increased probability</u> of students learning more if the teacher demonstrates certain teaching behaviors.[65] However, even strong statistical correlations do not necessarily represent cause and effect relationships, nor do they <u>guarantee</u> that a particular teacher behavior will result in increased student learning. Correlational results do, however, provide additional statistical support to confirm professional judgment and common sense about a particular relationship.

3. Some relationships are not linear, but curvi-linear. That is, the statistical relationship between a particular teacher behavior and a measure of achievement (or student conduct) may be positively correlated up to a point, but if the teacher behaviors continue, the strength of the dependent variable (student learning or behavior) begins to decline. This critical turning point must be known if the relationship is to be useful to the teacher. Otherwise, it might be assumed that "more of something" is always better.

4. The assessment instrument used in the study must be valid and reliable, and the classroom observer must be objective in his or her observation. In terms of validity, we must be assured that there is statistical evidence available to verify that whatever is being measured in the classroom (teacher behaviors) must in fact be the thing that the measuring instrument (observation record) is actually measuring, and not in fact something else. In terms of reliability, we must be assured that the instrument allows the observer to obtain consistent measures of teacher performance. We also assume that the trained observers are objective in recording their observations.

5. A good number of the studies in this review of the literature involved elementary students in grades K-3, with low socio-economic-status students, and in the subject areas of math and reading. Additional research is needed to determine if the results obtained in these studies are generalizable beyond these student groups and subject areas.

6. In some of the studies reviewed, low-inference data-gathering instruments were used, and in other cases high-inference instruments were used. It is often claimed that the margin for error, or potential for subjectivity in observation, is greater for data obtained from high-inference rating scales than for data obtained from low-inference observation records.

7. A positive (although negligible) correlation begins at +.01, and criteria for indicating that a "significant" relationship exists between a teacher behavior and a measure of increased learning is arbitrary, and varies from study to study. Medley (1977) in his extensive review of correlational studies on teacher effectiveness, used +.39 or higher for identifying "significant" relationships that exist between teacher behaviors and increased learning.[38] The rationale for using this particular figure was that student scores on standardized aptitude tests often correlate to this degree with scores obtained on standardized achievement tests.[38]

8. The number of students and teachers included in a study is important in terms of the generalizeability of the results obtained. A small sample should caution against assuming that the application of the results to larger groups would yield similar situations. In other words, the larger the sample size the greater the likelihood that the results of the study will have some practical educational value.

9. Much research completed in the area of teacher effectiveness has been correlational in nature. That is, experimental efforts have been directed toward the identification of relationships between what teachers do in the classroom and the extent to which teacher classroom behaviors have a direct effect upon student learning (as measured by standardized achievement test results). The correlation coefficients obtained when computing these relationships are thought to have potentially useful results if the correlations are "statistically significant." It must be remembered, however, that with a large enough sample, statistical significance can be reached when the correlation coefficient is extremely low. Generally, the greater the number of students and teachers involved in the study, the easier it is to obtain a low correlation that is "statistically significant." However, a correlation coefficient of .10 that is "statistically significant" has little practical value. It is not an easy task to decide when a correlation is strong enough to warrant making a decision based upon its strength. One way to make that determination is to multiply the correlation coefficient times itself, and convert the product into a percentage. This percentage indicates the approximate amount of common variance in both the independent and dependent variables. For example, if a correlation coefficient of .50 is obtained when computing the correlation between two variables (e.g., a measure of student achievement and a particular teacher classroom behavior), we can multiply .50 X .50 and get .25, or 25%, as a general measure of the common variance shared by the independent variable (teacher behavior) and the dependent variable (student achievement). Is this percentage high enough to decide that the

particular teacher behavior has significant impact on student learning? That's a judgment that would have to be made, and preferably the correlation coefficient obtained would be just one piece of information used in making a final decision.

10. Most statistical results, whether expressed as simple correlation coefficients, t-values, or F-ratios, are typically considered to be statistically significant when we are confident that they were not obtained through sampling error or by chance. Confidence levels of .01 and .05, which were frequently used in the studies reviewed in this paper, indicate that the likelihood a statistically significant relationship occurred due to sampling error or chance, was one chance out of a hundred, or five chances out of a hundred, respectively. These are commonly accepted confidence levels used in both correlational and experimentally-designed research studies.

11. Some of the studies summarized in this paper were abstracted from other reviews of teacher effectiveness research, and other studies reviewed were individual research projects. The wording, then, of the studies presented in this document, is sometimes that of the reviewers of research, and sometimes the wording of the researchers, themselves. Related to this is the fact that different researchers (1) use different standards to determine whether they will publish their research findings, and (2) vary in their willingness to acknowledge weaknesses in their studies, or inconsistencies in the results they obtained. The reader's personal or professional knowledge of an

investigator's previous research activities may be useful in determining the relevance of any results presented in this document to the reader's particular educational needs.

These caveats that I have mentioned, are presented to the reader of this review of literature as a caution against any desire to generalize the research results presented in this document to all grade levels, subject areas, ability levels, and students of various socio-economic status. It is intended that discretion will be used in applying the appropriate research results presented in this document only to relevant educational settings.

I. PLANNING

A. Definition

"Planning" refers to that domain of teaching in which teachers formulate a course of action for carrying out instruction over a school year, a semester, a week or several weeks, a day, or a lesson. Decisions made by teachers as they plan for instruction have an influence on all aspects of their classroom behavior and, consequently, on the nature of their learning outcomes that result from instruction.[64]

B. Recent Research Findings

Seating

"In general, findings suggest that seating position in the classroom can affect the students' level of participation in class activities with the greatest participation involving students in the front row and in the center desks of each row."[29]

Significantly greater on-task behavior occurs (at the elementary level) when students are arranged in circles than when in rows. Also greater on-task behavior when placed in clusters, versus in rows (circle highest, then clusters, then rows).[46]

Instructional Planning

This study investigated instructional planning by analyzing planning practices of six elementary teachers during the first nine weeks of the school year. Teachers planned on daily, weekly and yearly levels. Areas of planning included: (1) content, (2) materials, (3) activities, (4) goals, (5) students. Seven major planning tasks emerged: (1) arranging the classroom setting, (2)

determining the starting place for instruction and organizing students, (3) managing instructional time, (4) translating the curriculum to instructional strategies, (5) establishing routines for organization of structure, (6) designing five-day sequences of instruction, and (7) refining the instructional design.[25]

Teachers' use of "task systems" assisted them in guiding students through the completion of assigned classroom academic tasks. The use of many short, lower-level tasks and activities, wherein the teachers could more easily monitor progress, resulted in the student staying on-task and at least attempting to do the work. This resulted in generally high levels of student success in assignments.[9]

In describing attributes of effective classrooms, Stallings states that in effective classrooms pre-planning of classroom space can maximize student use of materials and participation in activities.[55]

According to the research of Evertson and Emmer (1982), and Brophy (1982), effective classroom management and behavior control begins from the first day of school with a systematic approach, advanced preparation and planning.[23]

II. MANAGEMENT OF STUDENT CONDUCT

A. Definition

"Management of student conduct" consists of at least three types of performance: a) teacher performance that reduces the probability of student disruptions, b) ways of stopping disruptive conduct once it occurs, and c) ways of dealing with serious misconduct rooted in personality abberations.[64]

B. Recent Research Findings

According to one study, the use of broad questions and extended wait-time by the teacher significantly influenced students' achievement and attitudes in a positive direction.[18]

Questioning Techniques

Henderson's study indicated that "direct and indirect teacher supervision tended to be associated with high time-on-task scores, and no teacher supervision was associated with low time-on-task scores."[31]

Pacing and Flow of Classroom Work

Englert's study showed that more-effective teachers maintained a brisker lesson pace, had higher student accuracy, prompted rather than gave correct answers following student errors--results supported hypothesis that teacher behavior is an important factor contributing to student achievement.[21]

McGarity's experiment involved 30 experienced science teachers and 672 middle and high school students--the TPAI (Georgia's Teacher Performance Assessment Indicators)--analysis of results showed that there was a significant relationship

between teacher classroom management, student engagement, student aptitude, and student achievement. Management behaviors that were correlated with achievement and engagement included:[16]

1) Identifying students who did not understand directions and helping them individually.
2) Maintaining students' involvement in lessons.
3) Reinforcing and encouraging students' efforts to maintain involvement.
4) Attending to routine tasks.
5) Using instructional time effectively.
6) Providing feedback to students about their behavior.
7) Managing disruptive behavior among students.

Teacher Behaviors That Reduce Possibility of Student Disruption

According to Doyle (1985) in his chapter on "Classroom Management" in the Handbook of Research on Teaching "most common types of student misbehavior include: (1) tardiness; (2) cutting classes; (3) failure to bring supplies and books; (4) inattentiveness; (5) talking; (6) call-outs; and (7) mild forms of verbal and physical aggression."[16]

Further, in his review of the research on Classroom Management, Doyle indicates the following:[16]

- In some situations students play complex verbal insult games and use threats of physical violence, and these events can have major consequences for order, but these forms of misbehavior are not widespread. In most cases misbehavior is caused by only a few unruly students while the rest of the class serves as members of an audience and as potential participants in the incident, if it spreads.

- One study reviewed by Doyle indicated that timing is important, in that high ability students were more likely to engage in off-task behavior at the end of lesson segments or during transitions, while low-ability students engaged in off-task behavior during the middle of lesson segments.

Teacher Expected to Maintain Order

- A review of other studies indicated that "although students and teachers do a considerable amount of interactional work together to define and sustain order in classrooms, students in both high- and low-ability classes view the teacher as the primary custodian of order in a classroom...and therefore the teacher must decide when and how to intervene into the flow of activity to repair order..."[16]

Intervention Strategies

- In terms of intervention strategies, Doyle's review of the research indicated that:[16]
  1) Successful classroom managers create order by establishing activities, anticipating potential misbehavior, and catching misbehavior early when it does occur.
  2) Interventions are inherently risky because they call attention to the misbehavior and disrupt the flow of class work.
  3) Successful interventions, substantiated by research include the following: (a) they are implemented early on, (b) are brief, and (c) do not invite further comment from the target student or students.

- In one study of first and fifth grade classes, 30 different types of interventions were identified. Verbal reprimands accounted for 58 percent of the total intervention episodes. Other types of interventions included: (1) praise; (2) prizes and surprises; (3) manipulation of privileges; (4) physical coercion/affection; (5) generalized threats; (6) isolation; (7) seat changes; (8) repetition of routines, "writing names," and detention. Of these, no single type of intervention accounted for more than 3 percent of total observed episodes.[16]
- One study noted that elementary teachers tend to use "soft imperatives," that is, suggestions or questions ("Why don't you put the pencil down?") to control behavior. Such indirect statements leave room for negotiation and avoid confrontation. Teachers have also used a variety of non-verbal signals effectively, including gestures, direct eye contact, and proximity (standing near the student), to regulate misbehavior.[16]
- Another study reviewed by Doyle, examined sanctions invoked by the teacher over 15 lessons in two kindergarten and two third grade classes. Of the 263 sanctions studied 47 percent consisted of the "squelch" form only (e.g., "Shh," "Wait," "Stop," or "No,") and 28 percent consisted of squelch plus a brief explanation (e.g., "Shh. Put your hand up if you want to say something."). The investigator in this study argued that the squelch form is uniquely suited

to interrupting and terminating a student's utterance, in that it is abrupt, short, and does not invite further comment or discussion from the student.[16]

- Doyle (1984) reported that junior high teachers tended to push on through the curriculum and did not let misbehavior become the central topic of conversation. This meant that although some rules were not enforced and the level of inappropriate behavior remained high, the continuity of the lesson or activity was maintained.[16]
- Results of several recent attempts to study teacher intervention decisions indicate that they depend upon (1) the teacher's knowledge of who is misbehaving, (2) what the misbehavior is, and (3) when it occurs.[16]
- Another study reviewed by Doyle (1985), at the elementary level, concluded that decisions to intervene were based upon information about (1) the student's history of deviancy, (2) the nature of the misbehaving act, and (3) the setting in which it occurred (i.e., large group or small group). Other factors determining the decision to intervene, included such factors as the task the student was engaged in, or the time of day or year.[16]
- Another study, reviewed by Doyle (1985), involving first graders, concluded that the decision to intervene was based upon the teacher's determination as to whether the behavior was serious and distracting, and decisions about the intensity of the intervention depended upon the student's history of inappropriate behavior.[16]

Discipline and Remediation-Procedures for Modifying Students' Classroom Behavior

- Doyle's (1985) review of the research in this area indicated that a large body of literature has grown up around the treatment of chronic and serious behavior problems at both the elementary and secondary level. According to Doyle, "...several comprehensive discipline models which have been proposed to deal with the chronic and serious behavior problems include Teacher Effectiveness Training, Transactional Analysis, Assertive Discipline, Reality Therapy, Social Discipline, and Behavior Modification, and other strategies based on theory and research." Since our purpose in this review of the literature is to focus on specific teacher classroom behaviors, no thorough analysis of these systems will be addressed here. According to Doyle, "...with the exception of behavior modification, there is little research available concerning the implementation or effectiveness of most discipline models."[16]

- According to Wildman and Borko (1983) in their review of the literature in developing the Beginning Teacher Assistance Program for the state of Virginia, four large-scale research studies were selected for review because they met the following four criteria:[61]

  1) Studies were conducted in natural classroom settings rather than in laboratory settings;

2) Research methods were described and appeared to be procedurally rigorous;

3) Studies included descriptions of teacher behavior and some indicators of teaching effectiveness; and

4) Studies included some analysis of the relationships between teacher behavior and measures of teacher effectiveness.

The four large-scale research studies that met these criteria for review included: 1) the First-Grade Reading Group study (FRG), conducted at the Research and Development Center for Teacher Education, University of Texas at Austin; 2) the Classroom Organization and Effective Teaching project (COET), also conducted at the Research and Development Center for Teacher Education at the University of Texas at Austin; 3) the Missouri Mathematics Effectiveness Project (MME); and 4) the Secondary Reading Study (SRS), a study of secondary reading classes conducted by Jane Stallings and associates. There were an accumulation of significant findings that came out of these studies, however, and those relating to Management of Student Conduct included the following:[61]

1) Effective teachers establish themselves as classroom leaders at the beginning of the school year;

2) Effective teachers are well organized in their administration of the classroom;

3) Effective teachers organize the classroom so as to insure the efficient use of time;

4) Effective teachers minimize students' misbehavior by being actively involved with students and closely monitoring their behavior;

5) Effective teachers respond promptly to student misbehavior;

6) The behaviors of effective teachers indicate that they organize and manage their classrooms in order to prevent misbehavior.

According to Stefanich and Bell (1985), there are a number of possible final alternatives for dealing with students whose misbehavior continues: 1) time-out within classroom; 2) time outside the classroom under direct supervision; 3) transfer to another classroom in the school; 4) within-school suspension; 5) out-of-school suspension; 6) expulsion or referral to residential school.[56]

Shrigley (1985) in his review of literature on student discipline, indicates that "body language" is effective in curbing most classroom disruptions. His nonverbal intervention technique involves a hierarchy of teacher behaviors that move in the following sequence:[53]

1. Nonverbal Intervention
    a. Ignore behavior
    b. Signals (eye contact, finger to mouth)
    c. Proximity control (move near misbehavior)
    d. Touch control (hand on shoulders)
2. Verbal Intervention

3. Outside Intervention

   a. Principal

   b. Counselor

   c. Parent

According to Evertson and Emmer (1982) in their year-long study of 26 junior-high school math teachers, and 25 junior-high English teachers from 11 urban schools, results of effective classroom management research indicate that teachers who effectively manage classrooms and lessons perform in the following manner:[22]

1) They handle inappropriate behavior promptly.

2) They manage competing or overlapping events.

3) They move smoothly through instruction.

4) They maintain appropriate pacing.

5) They maintain a group focus.

6) They utilize cues for engaging student behavior in order to (a) reduce inattentiveness during recitations by allowing only brief student responses, and thus keep control over pacing, and (b) reduce off-task pupil behavior during a transition by increased structure in the activity.

7) The teacher establishes (a) goal specificity, (b) incentives for appropriate behavior, and (c) coordinates use of rules, feedback, and consequences.

From a year-long study done in 1980 by Evertson, Emmer and Anderson involving 27 third-grade teachers observed extensively during the first three weeks of school, the following results were obtained:[22]

More-effective managers:

a) Had a more workable system of rules.

b) Taught their rules and procedures sytematically and thoroughly.

c) Monitored pupil behavior carefully.

d) Reacted quickly to stop inappropriate behavior.

e) Seemed more in touch with their students' needs.

f) Anticipated possible problems and concerns students might have in adjusting to the setting.

The main objective of the 1982 study conducted by Evertson and Emmer was to determine how effective teachers established order and created a productive learning environment in the classroom. The criteria used by Evertson and Emmer to distinguish between more- and less-effective classroom managers were as follows:[22]

1) Observation of percent of students on-task (student engagement rates).

2) An overall observation ranking by observers.

3) Student standardized achievement test scores.

4) Student rating of teacher scores.

Evertson and Emmer (1982) found that the main differences between effective and ineffective teachers in handling classroom management elements fell into these categories:[22]

1) Establishment of rules and procedures.

2) Monitoring of student compliance and following-through with consequences.

3) Establishment of a system of student responsibility or accountability for work.

4) Development of skills for communicating information.

5) Development of skills in organizing instructional activities.

1) Rules and Procedures

a) A wide range in the number of stated rules and their specificity was observed in both teacher groups. The same amount of time was devoted to explaining rules and procedures. However, more-effective teachers were more successful in teaching the rules and procedures (gave students copies of rules and regulations, or had students copy them in their notebooks), and they were more explicit about their expectations for classroom behavior.

b) For behaviors that occurred infrequently per period (tardiness, not bringing materials to class), and were easy to detect violations, no differences were detected among more- and less-effective teachers.

c) Less-effective teachers did not manage as well those student behaviors that had high potential for occurrence, or might be accepted under some circumstances, but not others (e.g. call-outs).

d) More-effective teachers typically had expectations about call-outs, movement about the room, talk among students, hand-raising, etc., which they translated into procedures to manage these behaviors.

e) Less-effective teachers had problems establishing a system to manage student-teacher and student-student contacts.

2. Monitoring Student Compliance with Rules and Procedures and Following-Through with Consequences

a) More-successful teachers monitored student behavior extensively and when inappropriate behavior occurred it was quickly attended to.

b) More-effective teachers were rated as being more consistent in managing behavior, although no more likely to use positive reinforcement techniques.

c) More-effective teachers tended not to ignore disruptive behavior.

d) More-effective teachers used rules and procedures more frequently (e.g., reminding students of the rule when they were in violation and requiring compliance).

e) Less-effective teachers had not established procedures to manage inappropriate behavior, and were forced to (1) ignore it, (2) make up a rule, or (3) to cope with the problem ad hoc.

f) More-effective teachers were more consistent in their enforcement of their system of rules and procedures.

g) Less-effective teachers were less likely to invoke pre-stated consequences (e.g., detention, demerits) for rule violations.

h) Less-effective teachers were inconsistent in applying rules--might consistently enforce tardiness, but not enforce rule regarding the bringing of materials every day.

i) For procedures having no pre-stated consequences (e.g., hands raised before answering, only quiet talk during seatwork) effective teachers were more likely to note and react to departures from acceptable behavior.

j) Less-effective teachers were less vigilant or less-inclined to intervene quickly--thus communicating inconsistent expectations for those types of behaviors.

3) Maintaining Student Responsibility for Work

Refers to students' responsibility or accountability for productive use of time in the classroom and completion of assigned work. The more effective teachers:

a) Kept better track of how students were progressing and whether they completed assignments.

b) Achieved more task-oriented focus in their classes.

c) Had a system for grading in which each aspect of student work was related to grades.

d) Stressed necessity for completing all assignments.

e) Stressed necessity for making up all work missed when absent.

f) Required daily assignment completion, students were required to maintain a notebook to store daily assignments, tests, and record class notes.

g) Collected assignments daily, and monitored students at beginning of assignments so that they were able to detect inability to do them, as well as preventing students from avoiding work.

h) Checked and graded assignments were frequently and regularly returned to students.

i) Communicated through procedures and consistent behavior, an attitude or expectation that their class time was for work-relevant activity, that they were aware of what students were doing, and that the students were accountable for their work.

4) Communicating Information

The more effective teachers were:

a) Successful in presenting information more clearly.

b) Clearer in giving directions and stating objectives.

c) Better able to communicate their expectations about behavior.

d) Better able to segment complex tasks into step-by-step procedures to help students understand their task, and how to accomplish it.

e) More aware of their students' entering skills.

5) Organizing Instruction

More-effective teachers:

a) Effectively challenged the more-able students.

b) Were better at designing activities that involved all students.

Chronic Discipline Problems

According to Levin, et al (1985) an effective field-tested strategy for resolving chronic discipline problems in the classroom include the following:[34]

- Use of anecdotal records for chronically-disruptive students is effective.
- Main goal of classroom management techniques is to enable students to become responsible for controlling their own behavior.
- Assumes that the reason for the student's misbehavior is not due to the teacher's actions or behavior.
- Anecdotal record serves as the basis for the daily end-of-the-day conference with the chronic misbehaver.
- Systematic record of student's behavior and teacher's response--describes both positive and negative behaviors exhibited and action taken by the teacher to curb the behaviors, and to reinforce positive behaviors.
- Anecdotal record is shared with the chronic misbehaver at the end of each day.
- Student must sign the record at the end of each conference.
- Student must agree to work toward improvement.

Data collected from 11 case studies verified the effectiveness of this strategy. It took three weeks, typically, to bring the chronic-misbehaver within acceptable limits of behavior established by the classroom teacher.[34]

CASES: An Approach to Modifying Inappropriate Classroom Behavior

Spaulding and Spaulding (1982) investigated the various coping styles of students, and the appropriate teaching strategies and techniques needed to maximize student on-task behavior, self-control, self-management, and cooperation. A low-inference observation instrument called CASES (Coping Analysis Schedule for Educational Settings) was utilized to gather data and identify which methods and techniques used by classroom teachers are most effective. The instrument is primarily oriented toward the elementary school classroom.

The CASES categories are outlined as follows:[68]

Style A (1) Dominative, Aggressive, Bothering, Manipulative

Style B (2) Resistant, Delaying, Peer-oriented, Off-Task

Style C (3) Withdrawn, Dreamy, Shy, Avoidant

Style D (4) Peer-dependent, Distractible, Off-Task

Style E (5) Attentive, Compliant, Adult-oriented

Style F (6) Assertive, Socially-integrative, On-Task

Style G (7) Self-Motivated, On-Task, Non-Social

Style H (8) Other-Directed, Conforming, Externally-Motivated to Remain on Task

Descriptions and examples of each kind of identified behavior is provided by the authors.

There are now seven basic treatments which have been tested in repeated case studies and found to be effective in bringing about improved classroom behavior or improved learning in

students who demonstrate one or another of the eight CASES-based coping styles. These treatments are shown in Tables 1-7, in Appendix B.

There are not eight treatments to match the eight behavior CASES categories since the treatment for Style E behavior is also appropriate for use with Style H behavior.

Although the CASES approach to modifying inappropriate classroom behavior is oriented toward the elementary school level, the authors also recommend its effectiveness at the secondary level. However, at the secondary level, rather than focusing on the individual coping styles of the students, the emphasis is on the use of teacher classroom procedures to reinforce appropriate or desirable student behaviors.

Spaulding has identified effective procedures that encourage student responsibility and self-direction in secondary school classrooms. These classroom procedures that can be successfully used by secondary teachers include (1) sign-offs, (2) touches, (3) verbal praise, (4) posting the names of students, (5) privileges, (6) withholding reinforcement, (7) withholding privileges, (8) inducing reinforceable behavior, and other specified techniques.

Reliability and Validity of CASES Instrument

When two or more coders observe the same pupil simultaneously on a 10-second sampling schedule, 85% or higher exact agreement is obtained.

Inter-rater reliability increases as the number of observations increases:

- Generalizability estimates of .79 after 4 observations
- Generalizability estimates of .83 after 5 observations
- Generalizability estimates of .90 after 10 observations

In terms of the validity of the CASES Instrument, Spaulding indicates that ..."a limited number of studies have been done in which CASES scores have been correlated with pupil outcome measures (such as academic achievement, study skills, and attitudes toward school). ...At this writing, these (validity) findings are suggestive, or hypothetical, and cannot be depended upon in any particular classroom or school setting."[68]

III. INSTRUCTIONAL ORGANIZATION AND DEVELOPMENT

A. Definition

Effective instruction consists of at least three components: (1) efficient use of time, (2) skillful management of the major teaching functions, and (3) skills in conducting classroom interaction. This domain deals with these three components.[64]

B. Recent Research Findings

Efficient Use of Time

A study investigating relationship between time spent in learning (TSL) and time needed for learning (TNL) involving 141 fourth and fifth grade students had these results:

1) "Underscores the importance of spending adequate time in learning, relative to amount needed, in order to maximize achievement."[26]

2) "The most obvious implications from these findings are that spending less time than needed in learning has a direct negative effect upon achievement."[26]

3) "The less time students spend engaged in academic activities the less they learn."[29]

Referring to Brophy (1982) "successful classroom managers maximize the time their students spend engaged in academic activities, their student have ...superior performance on achievement tests."[55]

Lynn Curry's (1984) three experiments included 24 fifth and sixth graders. Results indicated that achievement was predicted by time-on-task in a traditionally structured school, and suggest that increasing the amount of teacher-directed time would increase achievement in traditionally structured schools.[11]

Time allocated to course had positive effect on course grade --222 undergrads involved in the study.[24]

Homework assignments, exams and use of required text increased the time allocated by students to the course.[24]

Homework

Results indicate that most students achieve very little when given homework to complete without direct supervision. Sixty students from five Texas high schools (six students from each of ten classrooms) were selected for the study.[51]

Feedback

Students who were given positive feedback regarding their ability and effort, in order to motivate them, were more successful in learning subtraction skills than those who received no feedback.[50]

Grouping and Teacher Behaviors

Different patterns of teacher behavior are effective with learners of different ability in different subjects. Grouping students of varying levels of ability together may have serious drawbacks. What is effective teaching behavior for high ability students is ineffective for low ability learners.[42] These results were obtained from data based on observations of 21 elementary school teachers scored on 22 behavioral indicators of competence. Eighty-eight process-product correlations were obtained, showing relationships between student achievement gains and identified teacher competencies between achievement, test gain scores, and measured competencies.[42]

Structuring

Study examined effects of teacher structuring and reacting on children's ability to learn factual material. These are widely used behaviors as a part of recitation strategy. Recitation strategy refers to the teachers' presentation of information followed by questioning of students to see if their answers indicate an understanding of the material presented. "Structuring" refers to the teachers' telling the students what it is that they will be studying in the lesson, how the material is to be learned, and what the major points of the lesson will be. "Soliciting" refers to questions the teacher asks the students about the lesson material they are about to study. "Responding" refers to the students' answer to a question, and "reacting" refers to what the teacher does after the student responds. Stallings (1975) and others have found that higher achievement scores are obtained in lower-elementary level classrooms when the teacher employs the recitation strategy.[3]

Questioning Techniques

This study investigated the effects of a teacher's structuring and reacting behaviors on second graders' ability to learn factual material. Soliciting and questioning behaviors were not included as independent variables. Student achievement, as measured by the gain, or increase in achievement test scores, when students are given a pre-test in fall and post-test in spring, scores between pre- and post-test scores, was not significantly affected by either structuring, reacting or their interactive effects. These findings are similar to results obtained from previous experimental research.[3]

Structuring

In this study, practice effects were shown to be greater for the high ability student than they were for the low ability student.[33]

Variety of Findings From Various Studies

Achievement gain is positively correlated with minutes spent on task. The results of this research indicate that the lecture/discussion method of instruction yielded the highest correlation when compared with achievement gain. This seems to indicate that students spend more time-on-task when the teacher is in direct control of instruction. The use of seatwork as a learning strategy correlated negatively with achievement gain. Medley lists a set of understandings the teacher must have in order to be competent:[51]

1) Pupils learn best when activities flow smoothly and continuously.
2) Students learn best when the structure of the presentation is clear, i.e., the learner is alerted to important points, the teacher summarizes frequently, and provides frequent overviews, etc.
3) Students learn more if the teacher has high expectations for performance; the teacher prompts and encourages learners who have trouble answering questions, praises infrequently, and gives reason for praise.
4) Students learn more when the teacher presents objectives, gives overviews, etc.

5) Students working independently work better when supervised. Teachers should move around room and ask students if they need help.

6) Transitions from one activity to another are smooth and swift; teacher who knows this prepares materials in advance and has clear expectations of learner behaviors.

7) Children learn at different rates and have different ways of learning. Teacher plans activities for students who finish early.

8) Teachers should know that students learn more when correct responses are positively reinforced by teacher.

Academic Learning Time (ALT) is a key factor in determining teacher effectiveness.[13]

Medley's review of his own empirically-based research indicated the following facts about the effective classroom teacher in regard to instructional organization and development:[37]

1) The classrooms are orderly places.

2) Order is maintained by the teacher with little visible effort, with positive motivation, and little negative affect.

3) Pupil time is tightly structured.

4) Pupils are organized into one large group led by the teacher.

5) Pupils spend less time working in small groups or on individual tasks than in the average class.

6) Class discussions are closely controlled by the teacher.

7) Teachers ask more "low-level" and fewer "high-level" questions than in the average class.

8) Pupils ask relatively few questions.

9) When pupils answer the teacher's questions they are less likely to get feedback.

10) The teacher is less likely to amplify or discuss student answers.

11) When students work independently they are more closely supervised.

12) Notes, handouts, and student achievement had a positive cause and effect relationship.[54]

Study involved 79 Oklahoma City Public Schools Elementary Reading Chapter I teachers and their students. Results of study indicated that:[10]

1) Across all grade levels teachers who allocated more time for academic activities had students with higher achievement gains.

2) Same results occurred with teachers who interacted more with their students, especially interacting on a one-to-one basis with the students.

3) Effective teachers use an element of "challenge" in their lesson content, and ask higher order questions requiring student comprehension and analysis.

4) Teachers with high gain-score students a) used feedback strategies, and b) used praise sparingly in recognition of only truly superior work.

5) Teachers with the highest gain-score students used more difficult seatwork and vigilantly monitored student progress on seatwork.

6) Teacher asked more "opinion" questions in high-achieving groups of students.

Task Attractiveness

A student who feels competent while working on a task will be motivated to continue on task until it is completed. Teacher comments did not significantly affect return to task. Those who thought that they did well on a task and those who thought it was most interesting, also returned to task more frequently.[57]

Classroom Interaction

Selover's (1984) study demonstrated that a positive relationship exists between interactive teacher behaviors and both students' time-on-task and increased achievement. Researchers used intact sixth grade classrooms across four subject areas. The major inference to be drawn from this study is the probable relationship between observable class time-on-task and achievement.[52]

Waxman's (1983) research involved 762 fourth- and sixth graders from inner city public schools. Results of study indicated that of the eight classroom process variables studied--(1) didactic instruction, (2) teacher enthusiasm, (3) feedback, (4) instructional time, (5) opportunity to learn, (6) pacing, (7) structuring comments, (8) task orientation, only pacing and instructional time correlated positively with academic achievement.[60]

Rosenshine (1983) reviewed a number of studies dealing with teacher effectiveness that were experimental in nature and synthesized the following findings from these studies regarding students who are younger, slower, and/or have little prior background:48

Teachers are most effective when they --

- Structure the learning.
- Proceed in small steps but at a brisk pace.
- Give detailed and redundant instructions and explanations.
- Provide many examples.
- Ask a large number of questions and provide overt, active practice.
- Provide feedback and corrections, particularly in the initial stages of learning new material.
- Have a student success rate of 80 percent or higher in initial learning.
- Divide seatwork assignments into smaller assignments.
- Provide for continued student practice so that students have a success rate of 90 percent to 100 percent and become rapid, confident, and firm.

Rosenshine (1983) also found, in reviewing the same set of experimental studies, that there were six instructional "functions" which were characteristic of effective teachers:48

1) Review, checking previous day's work (and reteaching if necessary).
2) Presenting new content/skills.

3) Initial student practice (and checking for understanding).

4) Feedback and correctives (and reteaching if necessary).

5) Student independent practice.

6) Weekly and monthly reviews.

According to Rosenshine, these six functions represent the general nature of effective instruction, particularly at the elementary level.

Rosenshine, referring to studies by Brophy (1980) and an experimental study by Emmer, et al. (1982), and an experimental study by Kennedy and others (1978) makes the following suggestions for effective classroom presentations:[49]

- Present material in small steps.
- Focus on one thought (point, direction) at a time.
- Avoid digressions.
- Organize and present materials so that one point is mastered before the next point is given.
- Model the skill (when appropriate).
- Have many, varied, and specific examples.
- Give detailed and redundant explanations for difficult points.
- Check for student understanding on one point before proceeding to the next point.
- Ask questions to monitor student progress.
- Stay with the topic, repeating material until students understand.

Again, these suggestions for effective presentations are based primarily upon research conducted at the elementary and junior high school levels.

Cooperative Learning Experiences

Johnson and Johnson (1985) have conducted research on "cooperative learning." Their research indicates that it is a powerful instructional technique which prospective teachers can use to foster interpersonal growth and academic growth. They claim that cooperative learning has great potential for engendering student learning, but that it is not widely used in classrooms. In their research, Johnson and Johnson found that teachers use three possible goal structures:[66]

1. cooperative
2. competitive
3. individualistic

Their extensive research strongly supports structuring the classroom to facilitate students' working cooperatively.

Johnson and Johnson's research is based on the original theory of cooperative education developed by Morton Deutsch in the late 1940s' (his theory is based on work by Kurt Lewin dealing with motivation).

The three possible classroom goal structures (cooperative, competitive, and individualistic) are defined by Johnson and Johnson as follows:[66]

(1) Cooperative situation - is an interaction pattern
- goals of individual students are linked together
- results in a positive correlation among students' goal attainments

- individual attains goals only if all participants' mutual goals are attained
- each person seeks an outcome that is beneficial to all those with whom he or she is cooperatively linked

(2) Competitive situation
- results in a negative correlation among goal attainments
- individual attains his or her goal only if other participants cannot attain theirs
- person seeks an outcome that is personally beneficial but the attainment of which is detrimental to others with whom he or she is linked

(3) Individualistic situation
- no correlation among participants' goal attainments
- attaining a goal has no effect upon whether others attain their goals

Over 1,000 studies, dating back to the late 1800s' were examined by Johnson and Johnson, using meta-analysis to evaluate the effects of the three approaches on student achievement. The research findings have confirmed the following:66

(1) Cooperative learning experiences tend to promote more learning than either "competitive" or "individualistic" learning experiences.

(2) Research findings favoring cooperative learning experiences remained constant for age groups, subject areas, and types of learning activities.

(3) Achievement increased to a greater extent among all three groups when learning tasks were more difficult (e.g., problem-solving, divergent thinking, decision making, conceptual learning).

(4) Lower 1/3 of class, in ability, gains the most in achievement when using cooperative education learning experiences.

(5) Need to talk about information and ideas contributes most to achievement gain, rather than the students just thinking about them.

(6) Research shows retention of information is enhanced by cooperative education learning approach.

(7) Cooperative education promotes more motivation to learn.

(8) Effects of group success seem to be greater than individual feeling of success.

(9) More positive attitudes toward instructional experiences and instructors occur in cooperative learning situations.

(10) Higher levels of self-esteem are produced.

(11) In cooperative education learning environments there are stronger perceptions that other students care about how much one learns.

(12) Promotes greater acceptance of differences and interpersonal attraction among students from different ethnic backgrounds and among handicapped and non-handicapped students.

The ideal classroom should include all three types of learning experiences, carefully orchestrated by the teacher. In actuality, few public school classrooms use small group learning situations.

Johnson and Johnson identify four aspects of cooperative learning in the classroom:[66]

(1) The students sit close to each other, in small 2-3 member groups and discuss material.

(2) There is a strong sense of positive interdependence with a group goal and a group reward.

(3) There is a strong sense of individual accountability--instructor moves around room and among groups.

(4) The instructor monitors groups for (1) how group members are interacting, and (2) the quality of interaction taking place within the group.

Johnson and Johnson also point out the implications "cooperative learning" has for teacher training programs. They include the following:[66]

(1) "How to structure student-student interactions" in the classroom should be taught in the first course students take in methods courses and in field-based micro-teaching sessions.

(2) Cooperative education should be modeled by instructors in education classes since it is just as powerful a tool for adult education as it is for children.

The cooperative education techniques modeled in the teacher training programs should include the following:[66]

(1) There must be planned time during lectures to have students turn to the person(s) next to them and interact regarding some aspect of the instructional material. This tends to increase students' willingness to participate in general discussion afterwards, i.e., students participate more in learning.

(2) Focus Trios (3 students) are given 3-4 minutes at beginning of class to predict a solution or response. At end of class, ask the Trio to agree on the three most important things gleaned from the day's lesson.

(3) Base Group is a long-term group which lasts through the quarter. The group members may take quizzes together, study for exams together, or just meet to discuss various class activities and what they have done toward completing class assignments.

Johnson and Johnson's (1985) research indicates that cooperative learning experiences have the following impact on students and the classroom situation:[66]

(1) Increased achievement.

(2) More positive attitudes.

(3) A climate of acceptance of differences.

(4) A positive effect on many other learning outcomes.

Adult Learners

Andrews, et al (1981) conducted a research study involving adult learners in an effort to identify the adult learning process. Results obtained were based upon studies of Teacher Corps--sponsored workshops at the Corpsmembers' Training Institute (CMTI) in 1979. The research study involved 400 participants, divided into clusters of 40 people each. Pre-test and post-test results were compared for significant learning gains on standardized achievement tests. Results indicated that for adult learners, differences in learning style and personality are very important factors in the amount of learning that occurs.

The major research findings contained in the study are as follows:

(1) Adults personally and actively involved in the learning situation learn more cognitive material.

(2) Adults are less alike with respect to conditions under which they learn the best.

(3) Adults who do not perceive a need for, or have a desire, to learn, won't learn.

(4) The instructor of adults must understand what motivates adult learners.

(5) Adults require self-directed, self-paced learning that is relevant to their personal or vocational interests.

(6) Adults expect to rely on their experiences and abilities as they engage in learning activities.

(7) Adults prefer process rather than content approach to learning.

(8) Adults like to have the instructor provide the structure while they, as learners, engage in study for themselves.

Two surprising findings that developed out of the research were as follows:

(1) The relationship between time devoted to instruction and achievement was weak (but positive), and

(2) there was no significant difference between a groups' mean achievement and the members' attitudes.

IV. PRESENTATION OF SUBJECT MATTER

A. Definition

In this domain we are concerned primarily with the presentation of definitions, laws, law-like principles, and values. The teacher must deal with subject matter as definitions (concepts), rules as in grammar and mathematics, laws as in natural science, law-like principles as in social studies, and value statements.[64]

B. Recent Research Findings

There appears to be very little empirically-based research available on this topic. There was only one study reviewed which correlated the teaching of values with some form of achievement.

Bramsom's study was designed to determine the effects that values clarification experiences had on behavior, attendance, and grade reports of adolescent females (ninth grade students). "Based on the results of this study it cannot be concluded that a short-term program of values clarification can bring about changes in the classroom behavior, levels of attendance, or grade point averages of adolescent females.[4]

V. COMMUNICATION: VERBAL AND NONVERBAL

A. Definition

Communication, here, means more than verbal behavior. This domain identifies verbal and nonverbal behavior used by the teacher that elicits academic information from students, expresses it to them and either helps or hinders the expression of feelings in the growth of relationships with students. Among the concepts of communication are: understanding the impact of body language, voice quality and speech characteristics, controlling discourse related to the subject matter, and the use of behaviors that challenge students to engage in an academic task and hold their attention.[64]

B. Recent Research Findings

Nonverbal Communication

"Information on the relationship between nonverbal behaviors and students performance, while quite limited, does suggest that nonverbal assertiveness, or firmness might be important for effective management."[29]

Teacher Discourse

"...being seated beyond a certain distance from the instructor, or listening to an instructor who speaks in monotones, seldom looks at the students, gestures or smiles, may cause students to drift in and out of attending to class activities."[29]

"The results...indicate that a professor's verbal and nonverbal classroom communication behavior(s) have a profound effect on student perceptions of the quality of teaching. This study involved 60 teachers and 1,969 students."[43]

"Findings support the contention that when teachers improve their interpersonal skills, students enhance their classroom performances on a variety of measures."[2]

In a study which examined middle- and secondary school students' perceptions of teacher behaviors that convey the notion to the students that the teacher is "in charge" in the classroom, "nurturance" was found to be the most important teacher behavior to convey teacher authority to the students.[30]

Study results indicated cause-and-effect relationship between teacher uncertainty and student achievement.[54]

Verbal and Nonverbal Behaviors

In a study conducted by Murphy (1983) trained observers visited classes taught by lecturers who had received "low," "medium," and "high," student ratings. Observers estimated the frequency of occurences of 60 specific low-inference teaching behaviors. The intent of the experiment was to determine that there was a relationship between the extent to which a college teacher is rated as being "low," "medium," and "high," by his/her students and the kinds of teaching behaviors he/she manifests as determined by trained observers. The five teaching behaviors showing the largest raw score differences among "low," "medium," and "high" groups, were:[63]

1) Speaks expressively and candidly.
2) Shows strong interest in subject.
3) Moves about while lecturing.
4) Uses humor.
5) Shows facial expressions.

Analysis of variance was used to determine significant differences between groups. According to Murphy (1983) "the fact that these five (5) behaviors showed the largest group differences suggests that the use of effective methods of engaging in holding student attention is a very important factor in differentiating between successful and less-successful college lecturers."63

Cazden (1985), referring to Dore and McDermott's (1982) studies in classroom discourse, indicates that teacher verbal and nonverbal behavior interact to such an extent that they always impact in unison rather than in separate acts. Observations in the classroom confirm that "body orientations, gaze and gaze aversion, as well as talk" interacted to affect student responses. Without reference to the context in which it is used, and accounting the accompanying nonverbal behavior, talk alone is "fundamentally indeterminate."8

Other findings referred to by Cazden (1985) include the following:8

> Teacher-talk is often used as "control talk", i.e., as a means for controlling the flow of the lesson and classroom activities, and for managing student behavior, rather than as a means for communicating information.
>
> Elementary teachers often use intonation as markers of authority and transition such as in the use of the term "right now!"
>
> Cazden refers to "the paucity of references to humor in research on classroom talk."

VI. TESTING: STUDENT PREPARATION, ADMINISTRATION, AND FEEDBACK

A. Definition

The development and maintenance of an environment in which students can validly demonstrate their knowledge, skills, etc., and receive adequate information about the quality of their test performance. This includes skill in preparing the students for testing, test administration, and providing feedback to the students regarding test results.[64]

B. Recent Research Findings

<u>Test Anxiety</u>

Pearson correlation coefficients among variables show that test anxiety predicts achievement. Worst performers are highly anxious pupils of lower intelligence. A consistent main effect of test anxiety was that students of low test anxiety obtained higher marks than those with higher test anxiety. Also, boys and girls with lower intelligence achieved less and were influenced less by the impairing effects of test anxiety. "These findings have all been reported in India by Sharma (1983) and in Australia by Gaudry and Fitzgerald (1971)."[59]

"Previous research in several parts of the world has shown that test anxiety is inversely and significantly related to academic performance. Highly test-anxious students achieve less than those low on test anxiety. Much empirical evidence supports the notion that especially the worry factor accounts for the performance decrements observed in test-anxious persons."[59]

In a study conducted by Zatz and Chassin dealing with test anxiety, and the cognitions of low, moderate, and high test-anxious children under naturalistic test taking conditions, the results indicated:[62]

- High test-anxious children showed more task-debilitating cognitions during testing--had more negative self-evaluations and off-task thoughts and fewer positive self-evaluations, and they also had relatively high frequencies of coping self-statements (i.e., "calm down," "try harder," "concentrate!," etc.). These high test-anxious students performed poorly, relative to peers, only in classrooms that were high in perceived evaluative threat and they approached testing with thoughts of unfavorable social comparisons, difficulties with concentration, and a desire to escape the test situation.
- Coping self-statements failed to improve the performance of anxious students and data do <u>not</u> support a role for training in on-task or coping statements (e.g., "try to calm down") in the treatment of test-anxious children.

In a study by Paulman and Kennelly (1984), on "test anxiety and ineffective test taking" involving 64 high- and low test-anxious college students, with either good or poor exam-taking skills the results were as follows:[44]

- Test anxiety and exam-taking ability independently influenced cognitive problem solving in the evaluative setting.

- A deficit in adequate study habits and/or exam-taking skills--and not anxiety, is central to impaired performance of test-anxious students.
- Study habits and exam-taking skills of high test-anxious students are frequently poor.
- Anxiety reduction seldom improves performance on cognitive tasks, classroom tests or grade point average.
- Study-skills counseling, by itself, neither lessens anxiety nor improves academic achievement.
- Test anxiety is associated with an impairment in information-processing capacity that is apparently independent of both ability and exam-taking skill.
- Test anxious persons appear to have deficits in their working memories and information-processing ability.

Effects of Practice

Meta-analysis of 40 studies shows that students can raise their scores on aptitude and achievement tests by taking practice forms of the test. A single practice trial on an alternate form of an aptitude test resulted in a typical gain of three to four I.Q. points, while five or six trials resulted in average I.Q. gains of 10 points. Gains were greater when practice was on an identical test form. It appears that the effects of drill and practice programs of test preparation were to a significant degree a function of the amount of time spent on the drill and practice program.[33]

In a study conducted by Dolly and Williams (1985), on "using test taking strategies to maximize multiple choice test scores," their results indicated that, "...the experimental group outperformed the control group on the 24 items which measured testwiseness. The results of the analyses of the data indicate that some cognitive strategies can be taught which allow test-takers to increase scores on items for which they must guess the answer."

CONCLUSION

The preceding review of recent research findings was completed to complement the research review completed for Domains: Knowledge Base of the Florida Performance Measurement System, published in 1983. At that time Florida identified twenty-one teacher behaviors that make a difference in student achievement (Table One). Has this review of recent research altered this list of twenty-one behaviors?

No.

Nothing that has been learned since 1983 replaces the twenty-one behaviors. However, the recent review does add some further findings that should be considered by teachers, administrators, and teacher educators. Two teacher behaviors and two approaches to classroom organization were identified:

Teacher Behaviors

Wait Time

Additional research has added to the initial work supporting the use of "wait time" by teachers. Teachers who wait three to five seconds before calling on specific students for responses have a positive impact on student achievement.

Negative Affect

The complementary study on the affective domain completed by the Office of the Superintendent of Public Instruction consistently reports the negative impact of teacher-created negative affect on students' personal sense of worthiness and achievement.

Classroom Organization

Cooperative Learning

Classrooms can be organized to increase the extent of cooperative learning which does have a positive impact on student achievement. Four specific conditions are sited:

The students sit close to each other, in small 2-3 member groups and discuss material.

There is a strong sense of positive interdependence with a group goal and a group reward.

There is a strong sense of individual accountability -- instructor moves around room and among groups.

The instructor monitors groups for (1) how group members are interacting, and (2) the quality of interaction that took place within the group.

Grouping by Ability

Medley reported that teaching behaviors are directly related to student ability levels. This has major implications for how students are grouped for instruction. The teaching behaviors that are effective for high ability students are ineffective with low ability students.

It is perhaps best to conclude this study with the same quotation that began the study:

> Half of what we know is true.
> Half of what we know is false.
> The purpose of research is to find out
> Which parts of our thinking are true
> And which parts are false.
>
> (Medley, Soar, and Coker, 1984, p 8.)40

Because of the massive efforts of researchers, educators are beginning to know more about what is "true" and what is "false."

TABLE ONE

21 TEACHER BEHAVIORS THAT MAKE
A DIFFERENCE IN
STUDENT ACHIEVEMENT

1) GUARD YOUR USE OF TIME
   --begin instruction promptly
   --reduce time spent on bureaucratic activities
   --keep an academic focus
   --increase time-on-task
   --reduce social conversation in class

2) HANDLE MATERIALS IN AN ORDERLY, ORGANIZED MANNER

3) KEEP STUDENTS INFORMED ABOUT WHAT THEY ARE DOING
   --orient them to tasks and plans
   --give short, clear directions
   --refocus periodically during a lesson
   --avoid diverging conversations

4) REVIEW CONCEPTS AND SKILLS
   --begin lessons with review of previous relevant material
   --review periodically during a lesson
   --end a lesson with a short review

5) ASK SPECIFIC POINTED QUESTIONS
   --ask single factual questions
   --ask analytical questions
   --avoid repeated and multiple questions
   --avoid choral response
   --word statements as questions only when you want an answer

6) RECOGNIZE AND RESPOND TO STUDENT RESPONSES
   --avoid verbatim repetition
   --paraphrase and use student responses
   --amplify student responses
   --correct incorrect responses

7) GIVE SPECIFIC ACADEMIC PRAISE
   --tell children what was done that was praiseworthy

8) PROVIDE TIME FOR SUPERVISED PRACTICE

9) REQUIRE HOMEWORK
   --discuss assignments before students begin
   --check comprehension of assignments
   --set and honor a specific due date
   --evaluate homework and return it quickly

10) MONITOR SEATWORK
--decide which students need help
--decide which aspects of the lesson may cause difficulty
--circulate and observe
--catch errors as they are being made
--do not stay at your desk while students work

11) TREAT CONCEPTS THOROUGHLY
--provide definitions AND examples
--discuss attributes of the concept
--test examples and non-examples

12) TEACH SCIENTIFIC AND SOCIAL LAWS
--use cause and effect
--use linking words

13) APPLY AND PRACTICE ACADEMIC RULES

14) TEACH STUDENTS THE PROCESS OF EVALUATION
--define problems
--collect data
--determine criteria
--use criteria to decide

15) IDENTIFY IMPORTANT CONCEPTS, PROCEDURES, ETC.
--use marker expressions
--use marker techniques

16) BE ENTHUSIASTIC
--challenge students to improve
--use enthusiasm as you teach concepts

17) AVOID SCRAMBLED, VAGUE SPEECH

18) AVOID VERBAL IRREGULARITIES
--avoid high pitched voice
--avoid monotone
--avoid too soft or to harsh tones

19) USE BODY LANGUAGE TO DELIVER MESSAGES

20) STOP MISCONDUCT
--stop <u>appropriate</u> offender
--try not to interrupt lesson flow
--avoid harsh, punitive techniques
--use praise (catch 'em being good)

21) MAINTAIN INSTRUCTIONAL MOMENTUM
--keep students on-task
--provide for smooth transitions
--avoid irrelevant interjections
--don't leave tasks undone

APPENDICES

APPENDIX A

Domains: Knowledge Base of the Florida Performance Measurement System

APPENDIX B

CASES (Coping Analysis Schedule for Educational Settings)

APPENDIX A

DOMAINS: KNOWLEDGE BASE OF THE FLORIDA PERFORMANCE MEASUREMENT SYSTEM

I. Planning

This domain contains the following principles:

- If teachers attend to content, instructional materials, activities, learner needs, and goals in their instructional planning, the resulting preparedness can increase the probability of effective classroom performance.
- If teachers plan, they experience more confidence, direction, and security in their performance in the classroom.
- If teachers attend to elements such as arrangement of the physical setting, selection of basic texts and materials, and familiarity with social and academic development of their students early in the year, a framework for future planning is established for the year.

II. Management of Student Conduct

This domain contains the following principles:

- If the teacher clearly specifies classroom rules, explains them, provides practice, enforces them and gives positive consequences for compliance, then disruptive behavior will decrease, on-task time will increase, and achievement will increase.
- If the teacher demonstrates awareness of disruptive student behavior, selects the appropriate offender, stops it before it spreads, and offers alternative behaviors, then disruptive student behavior decreases.

- If the teacher handles overlapping situations without becoming preoccupied with one of them alone, then withitness is enhanced.
- If a teacher uses angry, punitive desists, the deviant student may stop his/her misconduct but the ripple effect on other students will cause an increase in emotional tension and disruptive conduct.
- If the teacher keeps the group alerted and focused on the lesson by creating a degree of suspense before calling on students to recite, selecting varied strategies for recitation and informing non-performers they may be called upon, then deviant behavior will decrease, and students will become more work involved.
- If jerkiness in the flow of classroom work is minimized in recitation settings, disruptive behavior is decreased.
- If slow-down of movement in class activities is avoided in recitations, then disruptive behavior decreases and student involvement in class activities increases. In seat work settings, avoidance of slowdown decreases deviancy but has no effect on work involvement.
- If the teacher uses praise in the primary grades, even if it is general, non-contingent, or otherwise flawed, children will be encouraged and their good conduct increased.
- If the teacher uses praise in the higher grades and high school, it will tend to correct misconduct provided it is specific, low key, sincere or used contingently.

III. Instructional Organization and Development

This domain contains the following principles:

- If the teacher is efficient in the use of class time, students will spend a high proportion of class time engaged in academic tasks and achievement will likely be higher.
- If reviews are conducted at the end of the lesson and at weekly intervals (or occasionally longer ones), retention, as well as the amount of learning, will be increased.
- If the teacher begins lessons by providing orientation and direction and sustains the lesson momentum by providing clear explanations, checking for student comprehension of explanations, maintaining direction by transitions from one part of the lesson to another and providing practice in unison where it is appropriate, learning will be increased.
- If low order questions are used by teachers of low SES students, achievement is likely to be higher than if high order questions are used.
- If the teacher acknowledges and amplifies student responses, uses their ideas, but organizes the lesson around the teacher's questions, and maintains academic focus, learning is increased.
- If academic feedback is specific, evaluative, and/or provides corrective information, achievement will increase.
- If students are prepared in class for assigned homework so they understand how to do it, the assignments are short, students are held accountable, and corrective feedback is provided, achievement can increase.

- If students understand what they are to do at seatwork and how they are to do it; and if the teacher monitors their work, provides corrective feedback, and holds them responsible, learning will be enhanced.
- If practice exercises of appropriate length and spacing are provided and students are held accountable for on-task behavior, learning will be enhanced.

IV. Presentation of Subject Matter

This domain contains the following principles:

- If concepts are taught by providing definitions, examples and non-examples, and by identifying criterial attributes, students are more likely to acquire complex concepts than if taught other ways.
- If teachers analyze causal conditions and their effects, students are more likely to comprehend cause-effect relationships.
- If teachers use linking words to connect the conditional part of a principle to the consequent part, student achievement in explanatory content will be higher than if the connection is made with conjunctions such as "and" or, even less effective, not made at all.
- If teachers make applications of laws or law-like principles, student achievement in explanatory knowledge will increase.
- If teachers direct students in using academic rules by describing rule circumstances and by providing rule practice, students are more likely to comprehend rule situations and follow appropriate rules.

- If teachers perform in keeping with the schema of evaluation and are rigorous in treating criteria and their application, students will likely learn to be systematic in considering value questions and more likely to reach defensible value judgments.

V. Communication: Verbal and Nonverbal

This domain contains the following principles:

- If teacher discourse is thematically connected, vague terms minimized and questions are asked singly and exactly, student achievement will increase.
- If marker expressions and techniques are used and main points are repeated in spaced intervals, students will be aware of important elements of content and achievement will be increased.
- If the teacher is zestful and challenges the students when moving from one task to another, the students become more work oriented and less disruptive.
- If the teacher's speech characteristics--including volume, pitch, rate, etc. are not extreme, student achievement may not be adversely affected.
- If the student demonstrates positive nonverbal (body) communication, students react favorably and achievement may be increased.

VI. Testing: Student Preparation, Administration, Feedback

This domain contains the following principles:

- If the teacher informs students of the purpose of the test, how the results will be used and why the results are relevant to them personally, their test performance will likely improve.

- If the teacher instructs students in utilizing the characteristics and formats of tests and/or test-taking situations to receive higher scores, the tests will be more valid measures of what they are intended to measure.
- If the teacher provides feedback to students on their tests, motivation, learning, and retention will increase, and the teacher will be more able to adjust instruction to the needs of the classroom group.
- If tests are administered in a physical setting which is comfortable and free of distractions and opportunities to cheat, and are given by an examiner who is positive and encouraging, students will have a fair chance to demonstrate what they know and the teacher will more likely obtain a valid measure of their achievement.
- If the teacher is aware of the anxiety caused by tests in some students and refrains from using tests as a threat or from emphasizing the negative consequences of poor performance, high anxious students will suffer less anxiety and perform better on tests.

APPENDIX B

CASES (Coping Analysis Schedule for Educational Settings)

Table 1

Treatment for Style A Behavior

(For dominative, aggressive, bothering, or manipulative pupils)

---

1. Set strict, narrow limits (set a specific routine to follow, step-by-step). Give no choices, either academically or socially. Set specific, concrete academic tasks.
2. Assign to specific work station (or learning center) to work alone.
3. Instruct individually or in groups of six or fewer.
4. Supervise closely (do not leave the student unattended).
5. Weaken <u>all</u> unacceptable behavior by responding immediately with careful and deliberate use of a suitable time-out procedure (i.e., by taking away freedom to move about, have an object, hear what others are saying, be able to see or observe what others are doing, etc.).
6. Reinforce (strengthen) all emerging desirable behavior. Do not overlook acceptable behavior. Mention it and praise it. Use social reinforcers as well as tokens and other concrete rewards.
7. Ignore visual wandering and distraction. Disregard daydreaming. Ignore delay and wasting time.
8. Ignore attempts to manipulate the teacher (yourself). Do not, however, ignore attempts to manipulate other students or aides in the room. Use a suitable time-out procedure to weaken such attempts.

1982, Robert L. Spaulding

Table 2

Treatment for Style B Behavior

(For resistant, delaying, peer-oriented, off-task pupils)

---

1. Set relatively broad limits (do not set a strict routine). Provide many non-social choices in terms of the conditions and circumstances of work and task undertaken.
2. Assign to a specific work station (or learning center) to work alone.
3. Use direct teaching techniques, avoiding direct commands and confrontations.
4. Do not supervise closely but remain nearby to reinforce appropriate behavior by giving novel material to use or responsibilities commensurate with task performance.
5. Ignore resistance and delay but weaken active aggression or manipulation of others by careful use of "time-out" (e.g., loss of freedom to move about, have an object, hear, etc.).
6. Reinforce all emerging task-oriented, productive behavior by giving bits of freedom, physical objects of a desirable nature (tokens), or privileges. Avoid giving praise or social approval since it often conveys submission to authority and can be a threat to these students.
7. Ignore dependent, submissive, and passive conformity if <u>they</u> occur.
8. Ignore attempts to manipulate the teacher (yourself), but not others. Use a suitable time-out procedure to weaken attempts to manipulate peers or classroom aides.

Note: Do not use this treatment if students are observed to have Style A, C, or D in their repertoire. If students are found to have Style B as well as one or another of the other inappropriate coping styles (i.e., A, C, or D), then use the treatment for the next most predominant coping style. This treatment, to be effective, requires students to have strong personal goals, self-direction capabilities, and motivation to be in control of their own learning activities.

1982, Robert L. Spaulding

Table 3

Treatment for Style C Behavior

(For withdrawn, shy, dreamy, avoidant pupils)

---

1. Set narrow, clearly defined tasks to be performed within specific limits (in terms of time, work location, steps to take, materials to use, etc.). Set a specific routine to follow, step-by-step. Give no academic choices, but allow social choices (that is, allow the student to seek assistance from peers).
2. Set concrete academic tasks. Use prototypic models for copying. Provide structure at all times. That is, make sure that goals, procedures, methods, steps to take, etc., are clearly defined.
3. Instruct individually or in groups of six or fewer.
4. Stay nearby to provide continuing structure and support for risk-taking. Pass by the student every few minutes, find a product or process to mention favorably, comment on it, then point out the next step to take, and move on to the next pupil.
5. Use "pump-priming" (physically assisting the student through the procedure) to get the behavior experienced kinesthetically, then reinforce the movement by commenting favorably on the pupil's movement and effort. Praise the student for the actions set in motion by the teacher.
6. Assign to a specific work station near supportive, task-oriented peers (Style F students).

7. Do not attempt to weaken behavior directly. Instead, use a strategy of strengthening emerging desirable behaviors. Do not punish. Pre-empt inappropriate behavior by waiting for incompatible, desirable behavior to appear, then pay attention to it and comment on it. Ignore any aggressive or annoying behavior which may appear at low levels or low frequency.

8. Reinforce <u>all</u> emerging active, pro-social, or productive behavior by praise, concrete rewards, or special privileges.

9. Ignore withdrawn or adult-dependent behavior. Don't respond to clinging, rocking, or self-touching, for example. Watch for the first cessation of such behavior and then go to the student and pay attention on a personal basis for a moment or two, then move on to the next student.

1982, Robert Spaulding

Table 4

Treatment for Style D Behavior

(For peer-dependent, distractible, off-task pupils)

---

1. Set narrow, clearly defined limits. Set a specific routine to follow, step-by-step. Provide clear models for follow. Do not give any social choices. That is, do not allow social interaction unless tutoring by Style F pupils is arranged.
2. Assign concrete academic tasks involving no more than one or two choices. Avoid complex or abstract academic assignments. Gradually increase academic choices (such as which problem to solve first, or when to complete an assignment, or which of two tasks to do first) as ability to attend to the task at hand increases.
3. Assign to a specific work station to work alone. When task-orientation increases, assign tasks involving use of reference materials and movement to and from the resource area. Make use of Style F peers when tutoring is called for.
4. Instruct in groups of six to ten, if possible, and avoid large group instruction.
5. Stay nearby to apply reinforcement (and sanctions, too, if necessary). Pass by the student every few minutes, find a product or activity worthy or praise and mention it. Then move on to another pupil.
6. Weaken all unacceptable behavior (aggression, if it occurs) by responding immediately with careful and deliberate use of a suitable time-out procedure (i.e., by taking away freedom to choose, to have an object, to hear what others are saying, or to see what they are doing, etc.).

7. Reinforce all emerging desirable behavior. As in the case of Style A students, do not overlook acceptable behavior. Mention it and praise it. Use social reinforcers as well as tokens and other concrete rewards (for example, bright slips of paper with extra credits, materials to use, etc.). Give material rewards as well as special privileges as a consequence of staying on-task.

8. Ignore teacher-dependent behavior. Ignore, also, attempts to manipulate the teacher and ignore any delay in getting to work.

1982, Robert L. Spaulding

Table 5

Treatment for Style E Behavior

(For attentive, compliant, adult-oriented pupils)

---

1. Set relatively broad limits. Permit many academic and social choices, both in terms of the conditions and circumstances of work but, also, the task to be undertaken. Do not set a strict routine, but increase structure and reduce choice when anxiety occurs.
2. If bids are made for structure, provide it--but gradually increase the amount of self-direction required by focusing on alternative solutions to problems. Give special attention to unique solutions provided to students in contrast to solutions which conform to models or algorisms provided by the teacher, the text, or other authorities.
3. Permit and encourage students to select their own work stations and companions. Remove this permission selectively to maintain on-task behavior among those working with others.
4. Set goals for Style E pupils in terms of their academic skill and knowledge. Be specific about goals, but allow wide latitude in the manner in which these students choose to work on their assignments.
5. Instruct in groups of 10 to 12 when introducing new concepts or skills. Avoid larger groups to permit each pupil to become clear about the goals set and the choices available to the students in working toward the goals.
6. Use concept acquisition teaching strategies (that is, discovery methods) when teaching new concepts. When concepts are clearly understood, switch to concept application exercises. Avoid rote methods except for basic skills.

7. Do not supervise closely, but return periodically to each pupil to reinforce productivity, innovation, independence, novelty in approach, and appropriate use of resources and freedom.

8. Withdraw freedom to make choices (both academic and social) as needed to control misuse of time and materials. After a class period or a day, restore freedom to make choices.

9. Reinforce all task-oriented academic and socially appropriate behavior with increased degrees of freedom to choose. Ignore minor disturbances and inappropriate social interaction. When off-task behaviors persist, remove all choice for a day or so, then restore choice again. Use "calendars" or "plans" to assist Style E students to stay on-task and manage their own learning.

1982, Robert L. Spaulding

Table 6

Treatment for Style F Behavior

(For assertive, socially integrative, on-task pupils)

---

1. Set very broad limits. Permit wide latitude for academic and social choices. Use self-managed study of work plans to permit self-direction and independent study under teacher guidance.
2. Permit Style F pupils to select their own tasks, work stations, task procedures and companions. Reinforce independence and self-direction when used wisely. Create opportunities for social interaction within the context of academic work.
3. Set goals clearly, then ask Style F students to decide the specific procedures to use to solve the problems given. Provide numerous resources such as models, textbook examples, alternative ways of proceeding, but ask them to decide which methods to use.
4. Give Style F pupils opportunities to tutor other students. Create opportunities for them to assume classroom responsibilities such as giving pre-tests and post-tests, proof reading, keeping records.
5. Assign Style F pupils (who are willing) to work as tutors of Style C or Style D students.
6. Do not instruct directly. Set academic tasks and goals in terms of the products desired. Identify the problems to be solved, but do not indicate the specific methods to be used. Encourage problem solving and self-directed learning. Provide support and structure, as needed, to foster delivery of concepts, principles, and generalizations. Use various teaching models such as discovery, role playing, synectics, and simulation.

7. Do not supervise closely. Visit students who are working independently from time to time during the class period or work session. Review the work completed and mention evidence of creativity, independent thought, novel methods of solution, more efficient methods, etc., then move on to other students.
8. Schedule periodic conferences with individual students if you are teaching in a self-contained classroom. Review the whole range of assignments with each student and give recognition for self-management and academic progress. Set goals for the next few days or weeks and keep records of individual progress.
9. Reinforce students for cognitive abilities, creativity, problem-solving, wise use of time and materials, self-evaluation, and application of principles learned earlier.

1982, Robert L. Spaulding

Table 7

Treatment for Style G Behavior

(For self-motivated, on-task, non-social pupils)

---

1. Set very broad limits. Permit wide latitude for academic and social choices. Use self-managed study of work plans to permit self-direction and independent study under teacher guidance.
2. Permit Style G pupils to select their own tasks, work stations, task procedures and companions. Reinforce independence and self-direction when used wisely. Create opportunities for social interaction within the context of academic work, but do not require group work.
3. Set goals clearly, then ask Style G students to decide the specific procedures to use to solve the problems given. Provide numerous resources such as models, textbook examples, alternative ways of proceeding, but ask them to decide on which methods to use.
4. Give Style G pupils (who are willing) opportunities to work with Style F students (or other Style G students). Make such opportunities attractive, but do not require them to work with others.
5. Do not instruct directly. Set academic tasks and goals in terms of the products desired. Identify the problems to be solved, but do not indicate the specific methods to be used. Encourage problem solving and self-directed learning. Provide support and structure (guidelines, etc.), as needed, to foster delivery of concepts, principles, and generalizations. Use various teaching models such as discovery, role playing, synectics, and simulation.

6. Do not supervise closely. Visit students who are working independently from time to time during the class period or work session. Review the work completed and mention evidence of independent thought, creativity, novel solutions, more efficient methods, etc., then move on to other students.
7. Schedule periodic conferences with individual Style G students if possible. If you are teaching in a departmentalized school, find a way to keep records of individual progress. Review the work completed and mention evidence of self-management and academic progress. Set goals for the next conference or class.
8. Reinforce students for cognitive abilities, creativity, problem-solving, wise use of time and materials, self-evaluation, and application of principles learned earlier. Avoid praise for conformity or for correct responses (in contrast to originality and problem-solving).

1982, Robert L. Spaulding

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